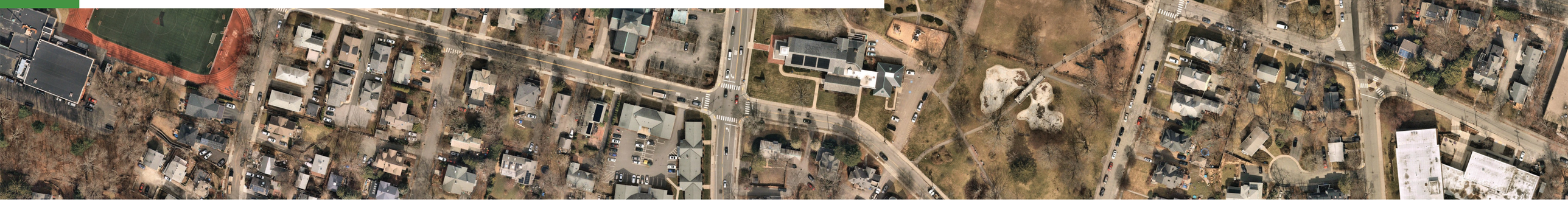
massDOT
Massachusetts Department of Transportation
Highway Division

Traffic Signal and Safety Improvements at Interchange 127 (Newton Corner)

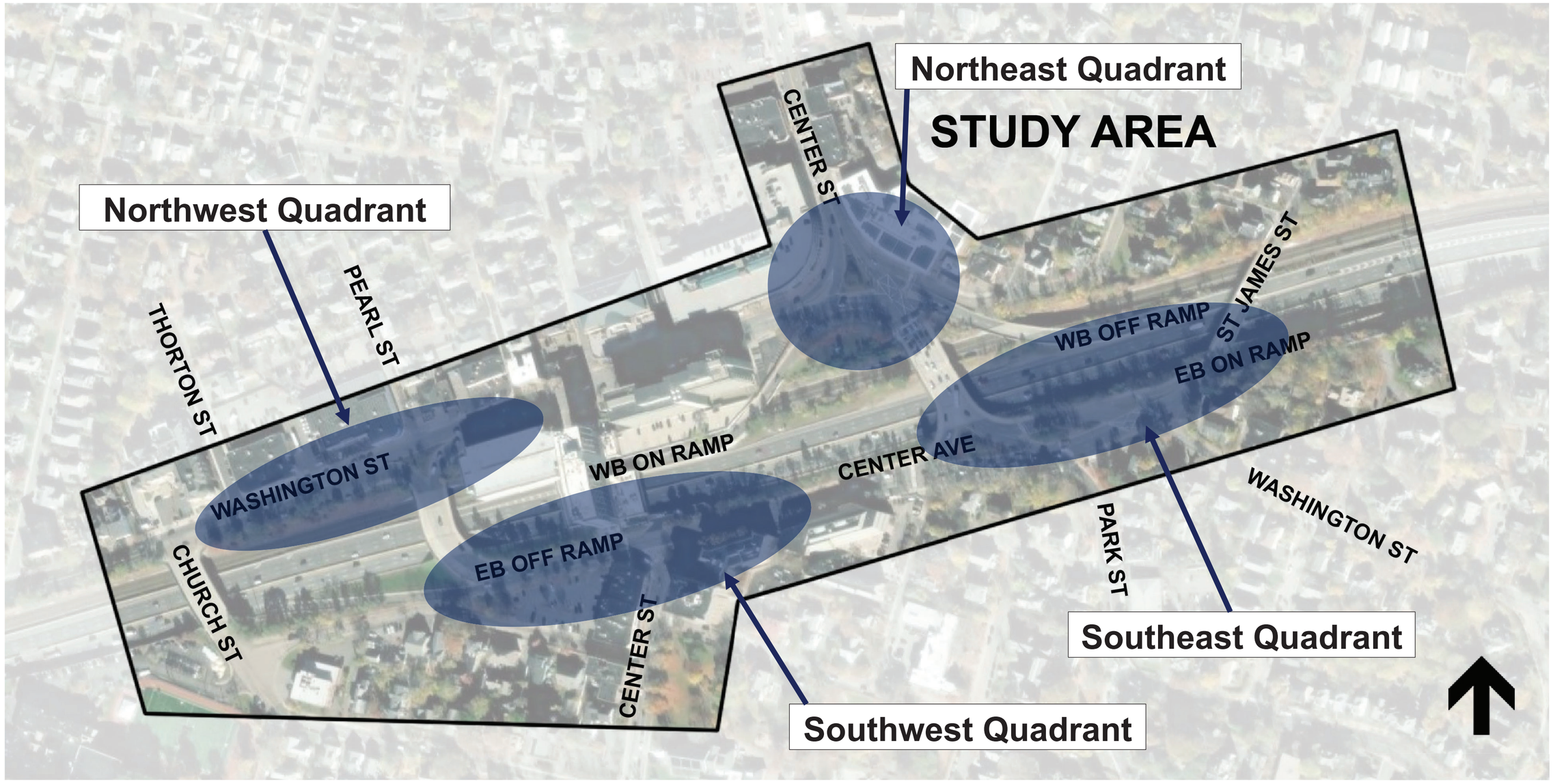
Concept Alternatives

From Public Outreach Workshop #3 | October 24, 2023

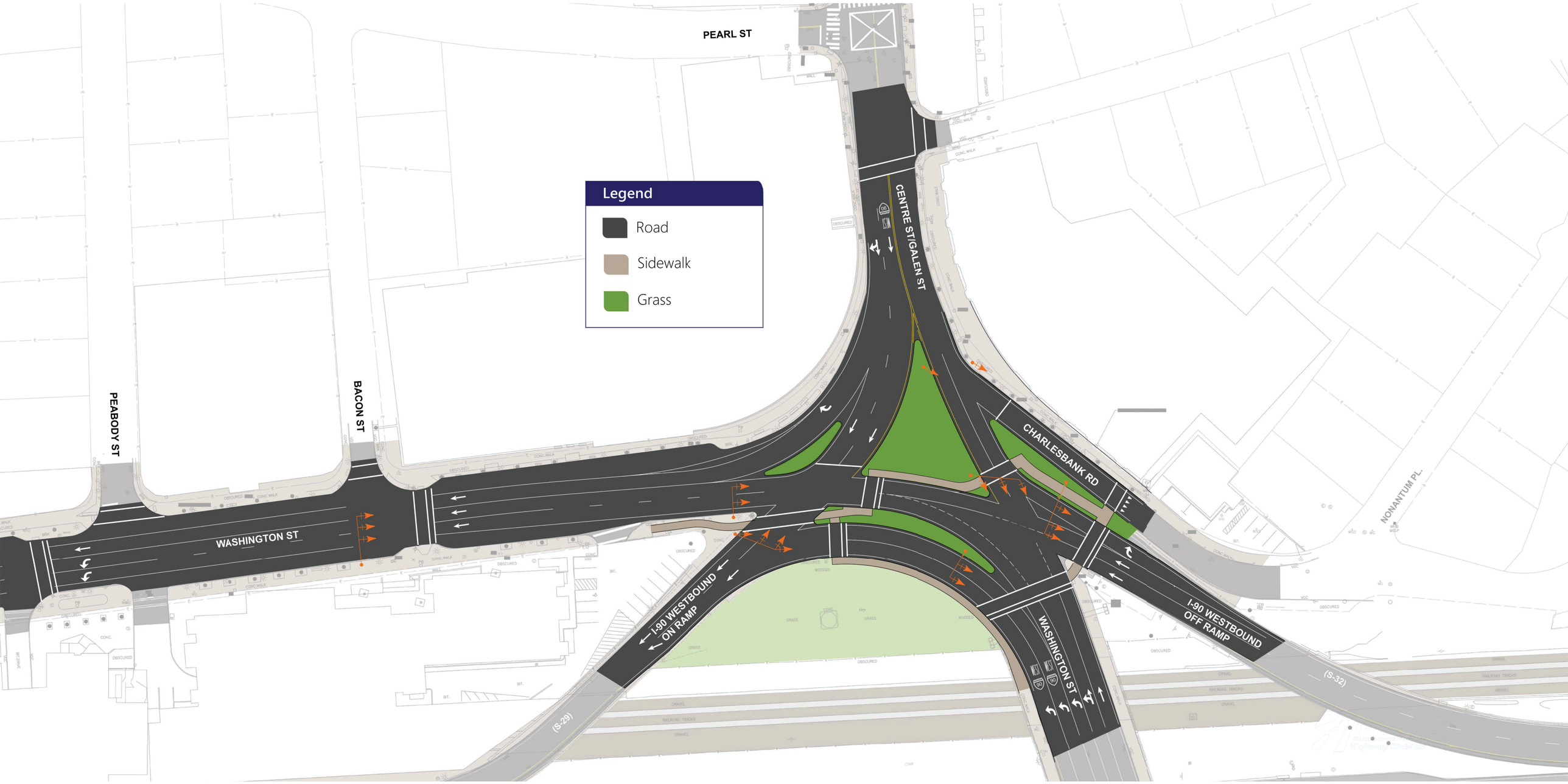
Project File No. 609288



Alternative Focus Areas



Northeast Quadrant—Concept A

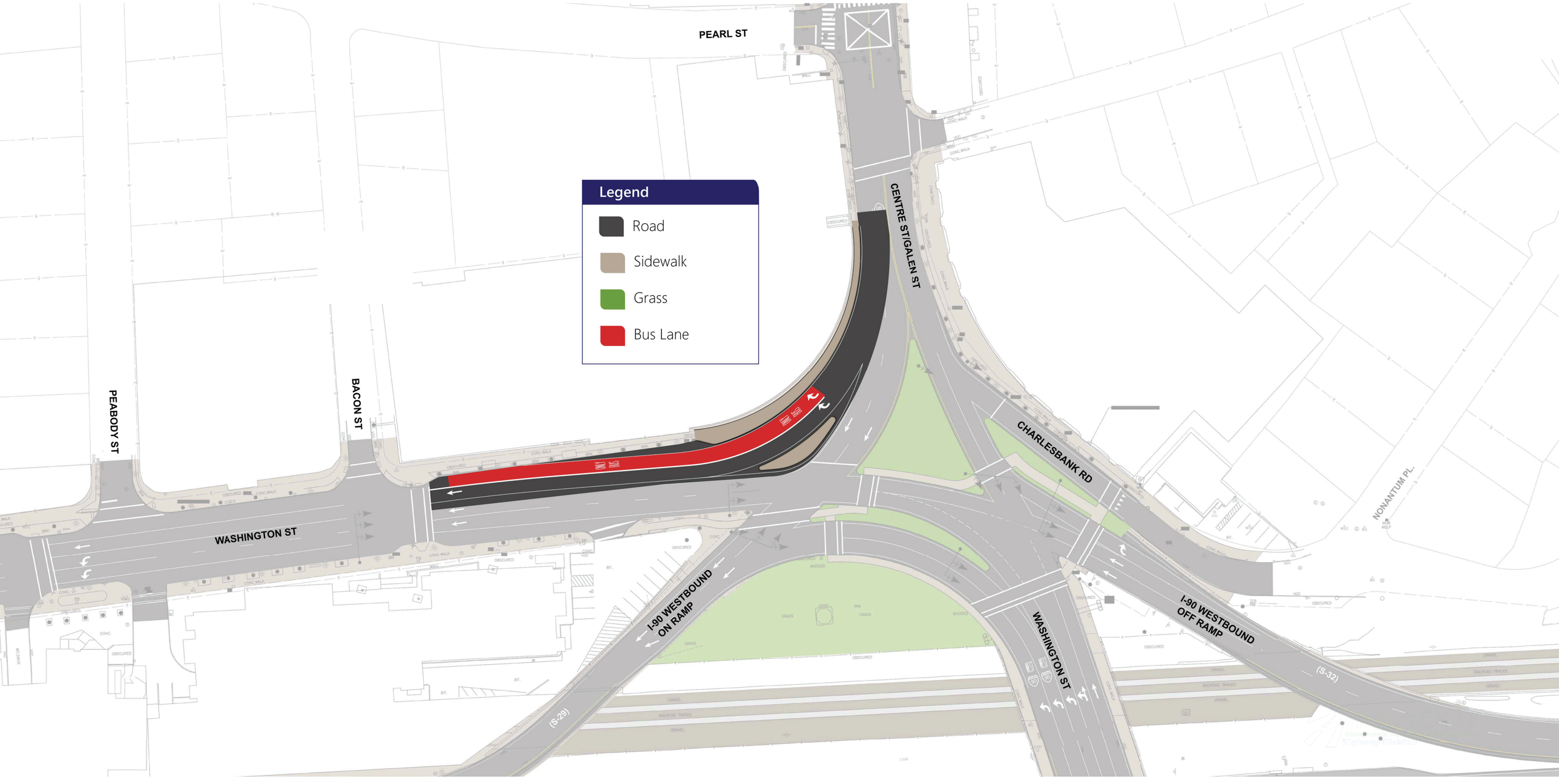


Alternative Summary – Northeast Quadrant
Concept A (Intersection Improvements)

	Goal	Infrastructure Changes
	Enhance Safety	- Minor geometric and signal timing changes - Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp
	Improve Traffic & Reduce Congestion	- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB
	Improve Transit	- Extended bus stop provided on Washington St WB after the right-turn slip lane
	Expand Multimodal Infrastructure	- New crosswalks installed across Centre St NB and Washington St WB lanes - Two new/expanded pedestrian islands (south of Charlesbank Rd and north of Bell Tower Park) - No pedestrian crossing installed across SB right-turn slip lanes - No dedicated bicycle infrastructure
	Property Access & Parking	- Minimal impacts to property access and parking
	Land Use & Placemaking	- Minimal changes for land use and placemaking

massDOT Massachusetts Department of Transportation Highway Division

Northeast Quadrant—Concept B

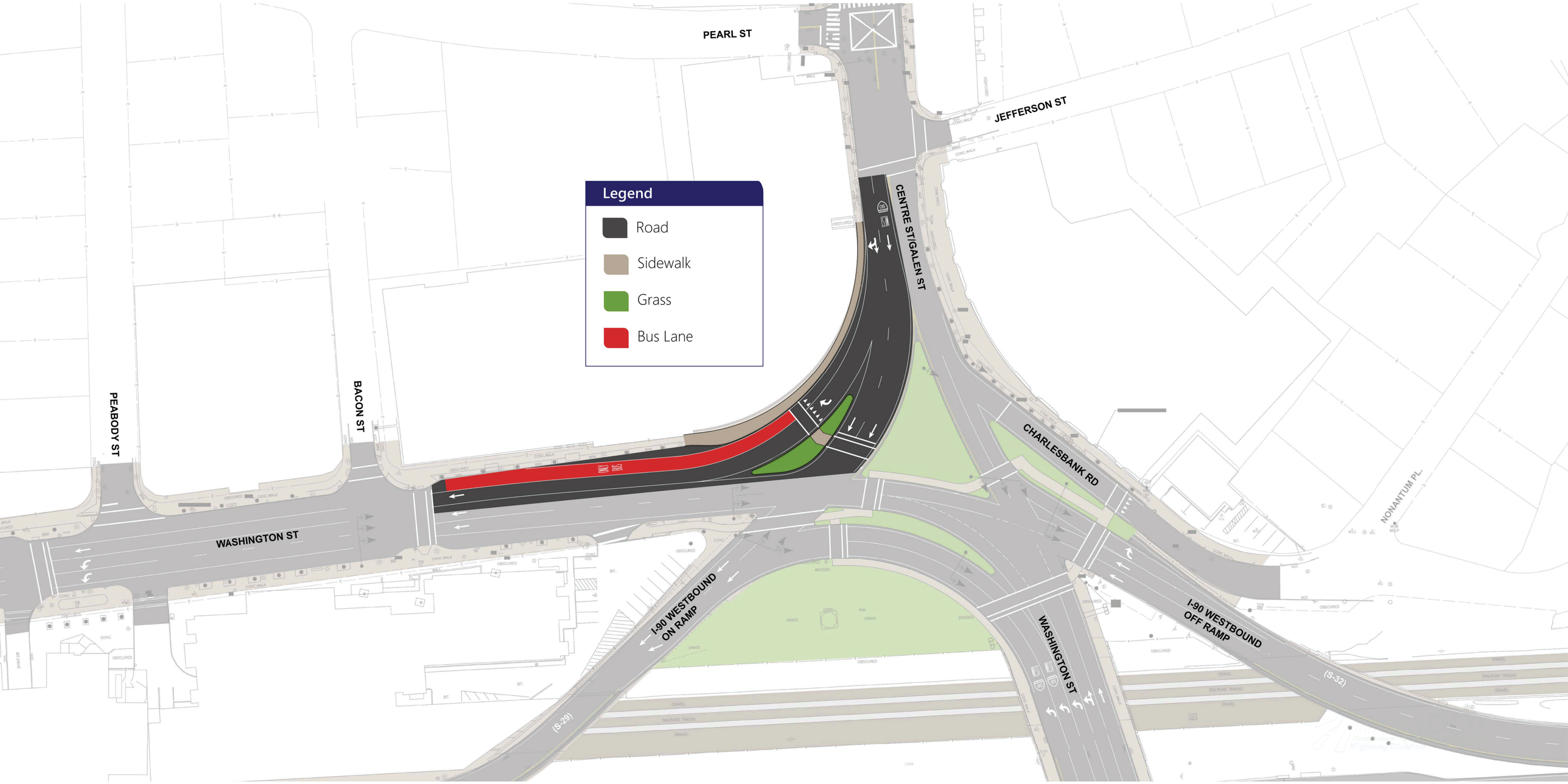


Alternative Summary – Northeast Quadrant
Concept B (Intersection Improvements + SB Right-Turn Bus Lane)

	Goal	Infrastructure Changes
	Enhance Safety	- Minor geometric and signal timing changes - Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp
	Improve Traffic & Reduce Congestion	- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB
	Improve Transit	- New SB right-turn bus-only lane from Centre St SB onto Washington St WB
	Expand Multimodal Infrastructure	- New crosswalks installed across Centre St NB and Washington St WB lanes - Two new/expanded pedestrian islands (south of Charlesbank Rd and north of Bell Tower Park) - No pedestrian crossing installed across SB right-turn slip lanes - No dedicated bicycle infrastructure
	Property Access & Parking	- Minimal impacts to property access and parking
	Land Use & Placemaking	- Minimal changes for land use and placemaking

massDOT Massachusetts Department of Transportation Highway Division

Northeast Quadrant—Concept C



Alternative Summary – Northeast Quadrant

Concept C (Intersection Improvements + SB Right-Turn Crosswalk)

	Goal	Infrastructure Changes
	Enhance Safety	- Minor geometric and signal timing changes - Designation of second SB lane for on-ramp formalizes movements that are currently made, but also adds an official merge on the on-ramp - Designated pedestrian crossing of SB right-turn lane
	Improve Traffic & Reduce Congestion	- Addition of second SB lane for on-ramp provides more official capacity on Centre St SB
	Improve Transit	- New SB right-turn bus-only lane from Centre St SB onto Washington St WB starting after pedestrian crossing
	Expand Multimodal Infrastructure	- New crosswalks installed across Centre St NB, Washington St WB, and Centre St SB lanes - Three new/expanded pedestrian islands (south of Charlesbank Rd, north of Bell Tower Park, and east of SB right-turn slip lane) - No pedestrian crossing installed across SB right-turn slip lanes - No dedicated bicycle infrastructure
	Property Access & Parking	- Minimal impacts to property access and parking
	Land Use & Placemaking	- Minimal changes for land use and placemaking

massDOT Massachusetts Department of Transportation Highway Division

Alternative Evaluation—Northeast Quadrant

(Poll Question #4)

Goal	Concept A: Intersection Improvements	Concept B: Int. Improvements + SB Right-Turn Bus Lane	Concept C: Int. Improvements + SB Right-Turn Crosswalk
Enhance Safety	☑	☑	☑
Improve Traffic & Reduce Congestion	☑	☑	☑
Improve Transit	○	☑	○
Expand Multimodal Infrastructure	☑	☑	☑☑
Property Access & Parking	○	○	○
Land Use & Placemaking	○	○	○

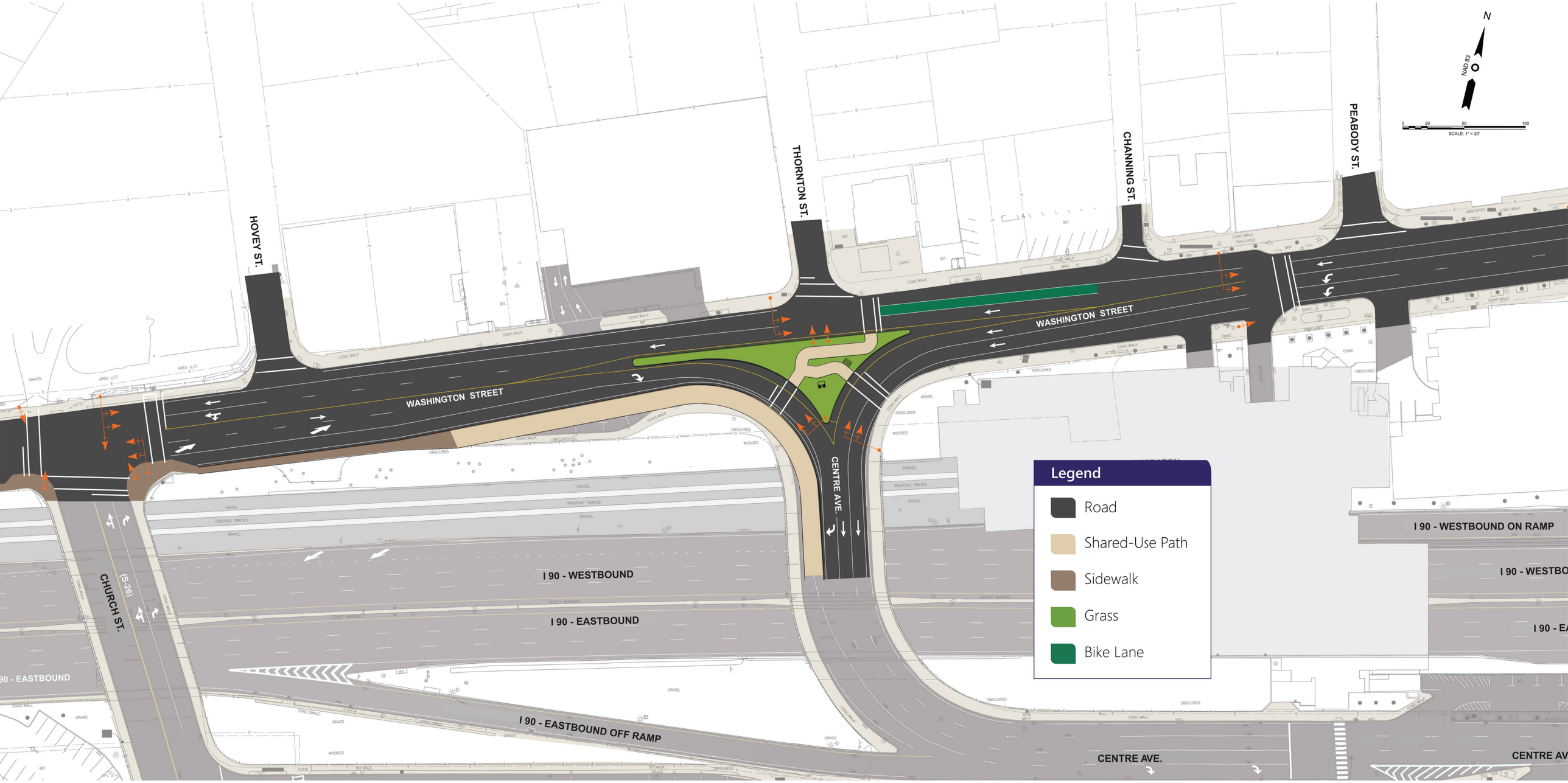
☑☑ *Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*

Legend

- ☑ Positive Impact
- ○ Neutral / No Impact
- ☒ Negative Impact

MassDOT Massachusetts Department of Transportation Highway Division

Northwest Quadrant—Concept A

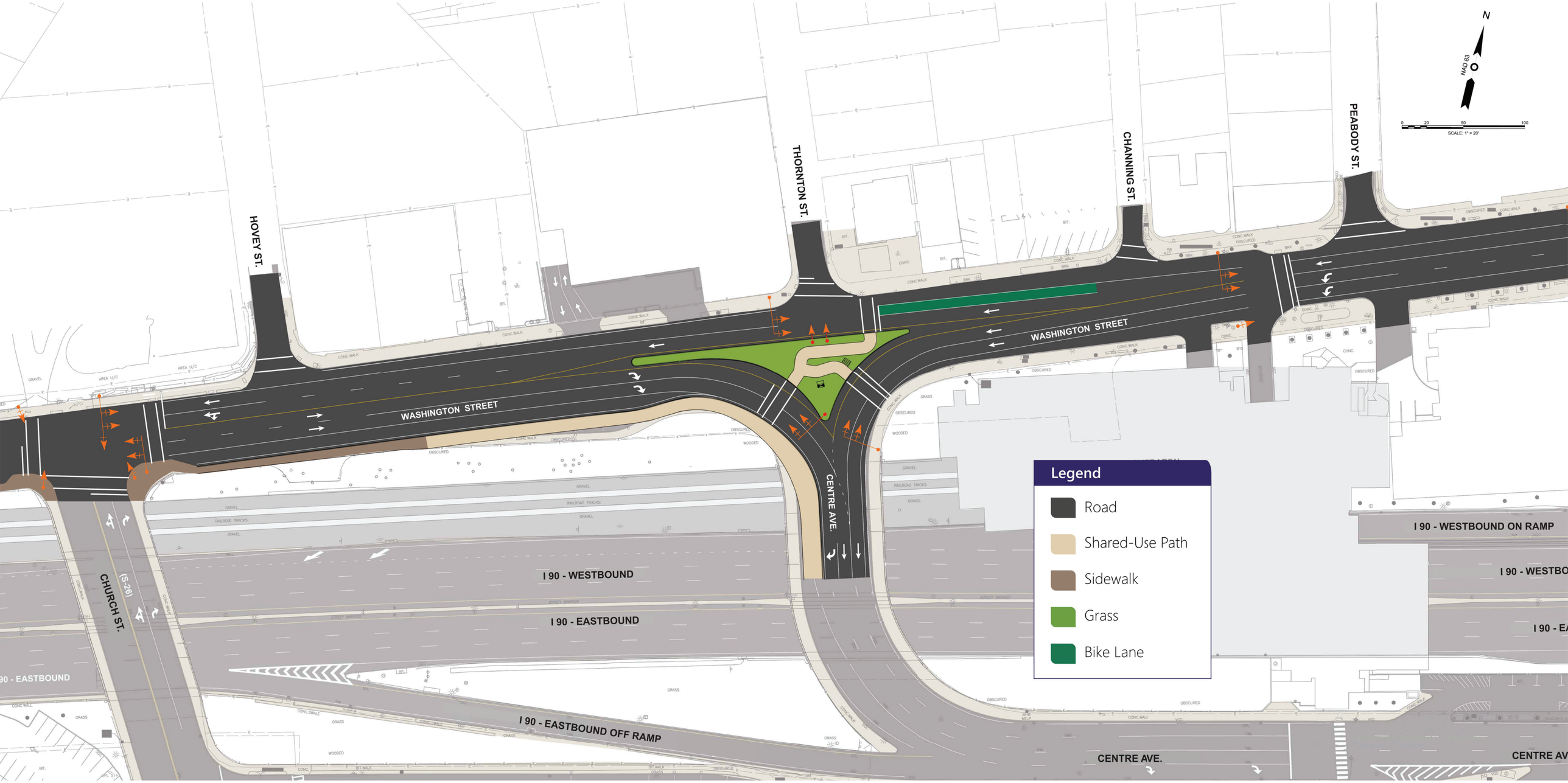


Alternative Summary – Northwest Quadrant
Concept A (Signal Control with One Lane Eastbound)

	Goal	Notes
	Enhance Safety	- Eliminates weave on bridge - New traffic signals for Washington St and Thorton St controls pedestrians and vehicles
	Improve Traffic & Reduce Congestion	- New traffic signals control traffic flow - Eastbound traffic will need to merge to a single lane - Potential for delays at Hovey St with EB vehicles stopped in merge area waiting to turn left
	Improve Transit	- Opportunity for enhanced inline bus stop on Washington St EB east of Church St
	Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on Washington St EB bridge - Provides protected signalized crossings across Washington St EB and WB - Option for an on-road bicycle lane on Washington St WB - Wider shared-use path west of overpass than provided in Concept B
	Property Access & Parking	- May introduce conflicts for on-street parking adjacent to EB merge
	Land Use & Placemaking	- Minimal changes for land use and placemaking

MassDOT Massachusetts Department of Transportation Highway Division

Northwest Quadrant—Concept B



Alternative Summary – Northwest Quadrant
Concept B (Signal Control with Two Lanes Eastbound)

	Goal	Notes
	Enhance Safety	- Eliminates weave on bridge - New traffic signals for Washington St and Thorton St controls pedestrians and vehicles
	Improve Traffic & Reduce Congestion	- New traffic signals control traffic flow - Maintains two lanes eastbound without the need for vehicles to merge - Shorter vehicle queues than Concept A
	Improve Transit	- Opportunity for enhanced inline bus stop on Washington St EB east of Church St
	Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on Washington St EB bridge - Provides protected signalized crossings across Washington St EB and WB - Option for an on-road bicycle lane on Washington St WB - Narrower shared-use path west of overpass than provided in Concept A
	Property Access & Parking	- Likely no changes to parking or land access
	Land Use & Placemaking	- Minimal changes for land use and placemaking

MassDOT Massachusetts Department of Transportation Highway Division

Alternative Evaluation—Northwest Quadrant

(Poll Question #5)

Goal	Concept A: Signal Control with One Lane EB	Concept B: Signal Control with Two Lanes EB
Enhance Safety	☑	☑
Improve Traffic & Reduce Congestion	☑	☑☑
Improve Transit	○	○
Expand Multimodal Infrastructure	☑☑	☑
Property Access & Parking	☒	○
Land Use & Placemaking	○	○

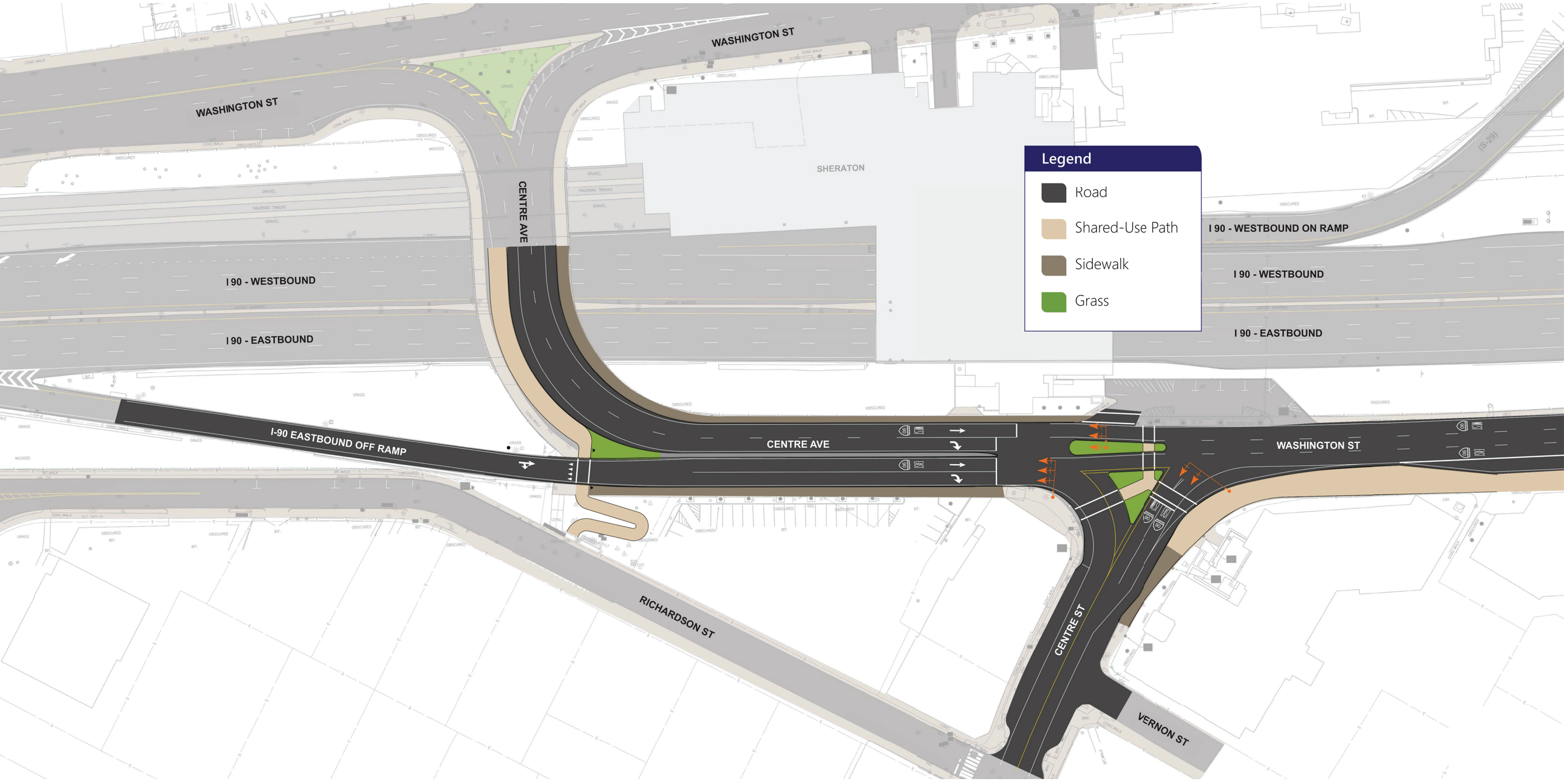
Legend

- ☑ Positive Impact
- ○ Neutral / No Impact
- ☒ Negative Impact

☑☑ *Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*

MassDOT Massachusetts Department of Transportation Highway Division

Southwest Quadrant—Concept A

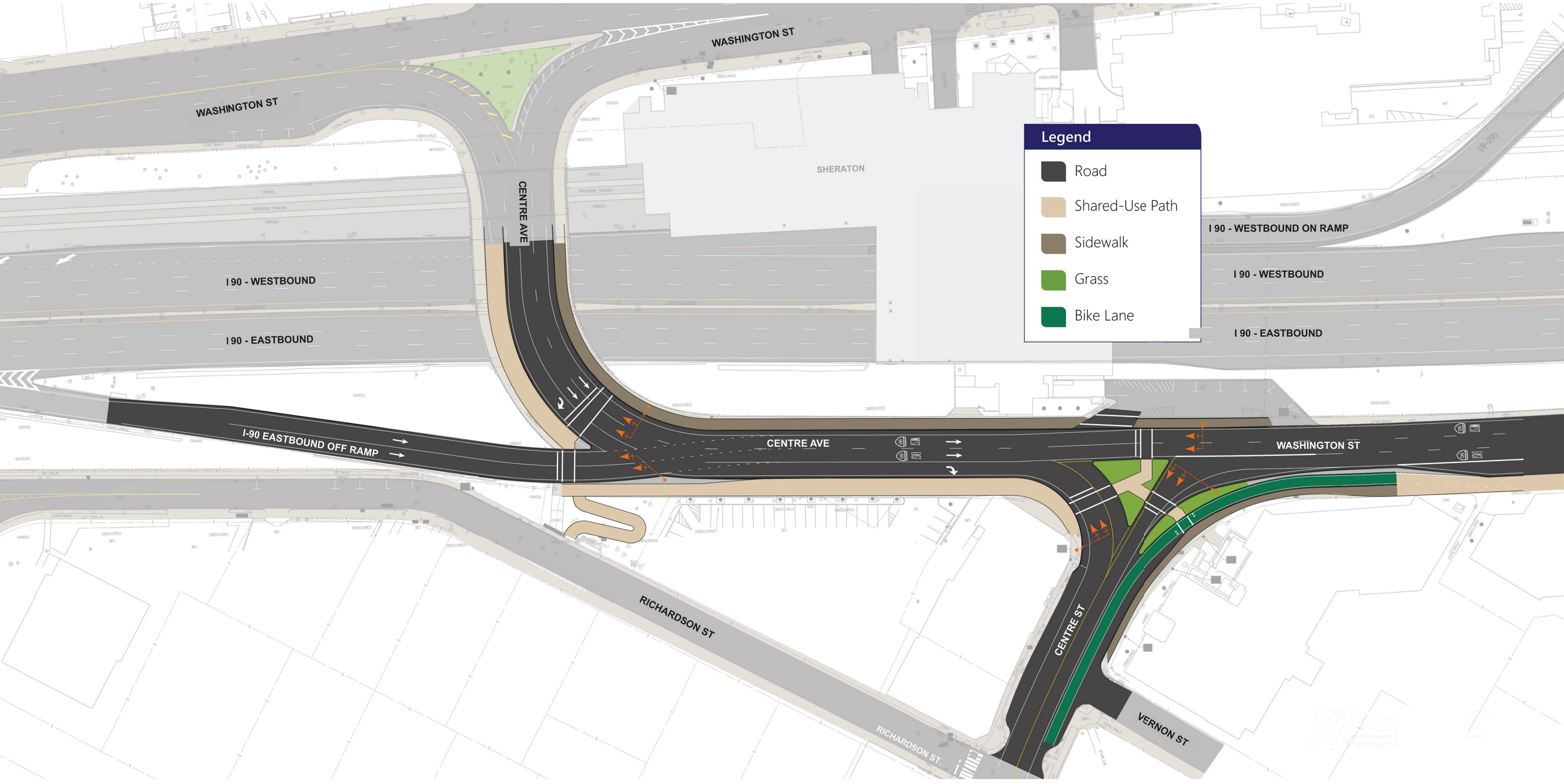


Alternative Summary – Southwest Quadrant
Concept A (Off-Ramp Divided to Signal at Centre Street)

Goal	Infrastructure Changes
Enhance Safety	- Places off-ramp traffic under signal control and eliminates weave on Centre Ave EB - Provides a physical separation between I-90 EB off-ramp and Washington St EB traffic - Ped/bike crossing of off-ramp traffic unsignalized (possible RRFB)
Improve Traffic & Reduce Congestion	- Reduces queues for I-90 EB off-ramp traffic - Includes queue detection for off-ramp to control queues from spilling onto I-90 mainline - Increases delays and queues for Washington St EB and Centre St NB traffic
Improve Transit	- Minimal impacts to transit accommodations
Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on the Washington St EB bridge - Unsignalized mid-block ped/bike crossing of off-ramp (possible RRFB) - Shared-use path connection to Richardson St south of I-90 EB off-ramp - No shared-use path on Centre Ave EB, bike traffic must transition to Richardson St - Shorter pedestrian crossing across Centre Ave EB
Property Access & Parking	- Access eliminated to Richardson St parking lot from Centre Ave EB
Land Use & Placemaking	- Minimal changes for land use and placemaking

MassDOT Massachusetts Department of Transportation Highway Division

Southwest Quadrant—Concept B



Alternative Summary – Southwest Quadrant
Concept B (Two-Lane Off-Ramp with Signal Control)

	Goal	Infrastructure Changes
	Enhance Safety	- Places off-ramp traffic under signal control and eliminates weave on Centre Ave EB - All ped/bike crossings under signal control - Does not eliminate weave east of Centre St as NB and EB traffic will have concurrent green lights
	Improve Traffic & Reduce Congestion	- Reduces queues for I-90 EB off-ramp traffic - Includes queue detection for off-ramp to control queues from spilling onto I-90 mainline - Increases delays and queues for Washington St EB traffic
	Improve Transit	- Minimal impacts to transit accommodations
	Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on the Washington St EB bridge and on the south side of Centre Ave EB - Signalized ped/bike crossing of I-90 EB off-ramp traffic - Shared-use path connection to Richardson St south of I-90 EB off-ramp - Sidewalk-level bicycle lane on Centre St NB onto Centre Ave EB - Shorter pedestrian crossing across Centre Ave EB
	Property Access & Parking	- Minimal impacts to property access and parking
	Land Use & Placemaking	- Minimal changes for land use and placemaking

massDOT Massachusetts Department of Transportation Highway Division

Alternative Evaluation—Southwest Quadrant

(Poll Question #6)

Goal	Concept A: Off-Ramp Divided to Signal at Centre Street	Concept B: Two-Lane Off-Ramp with Signal Control
Enhance Safety	☑	☑
Improve Traffic & Reduce Congestion	☑	☑☑
Improve Transit	○	○
Expand Multimodal Infrastructure	☑	☑☑
Property Access & Parking	○	○
Land Use & Placemaking	○	○

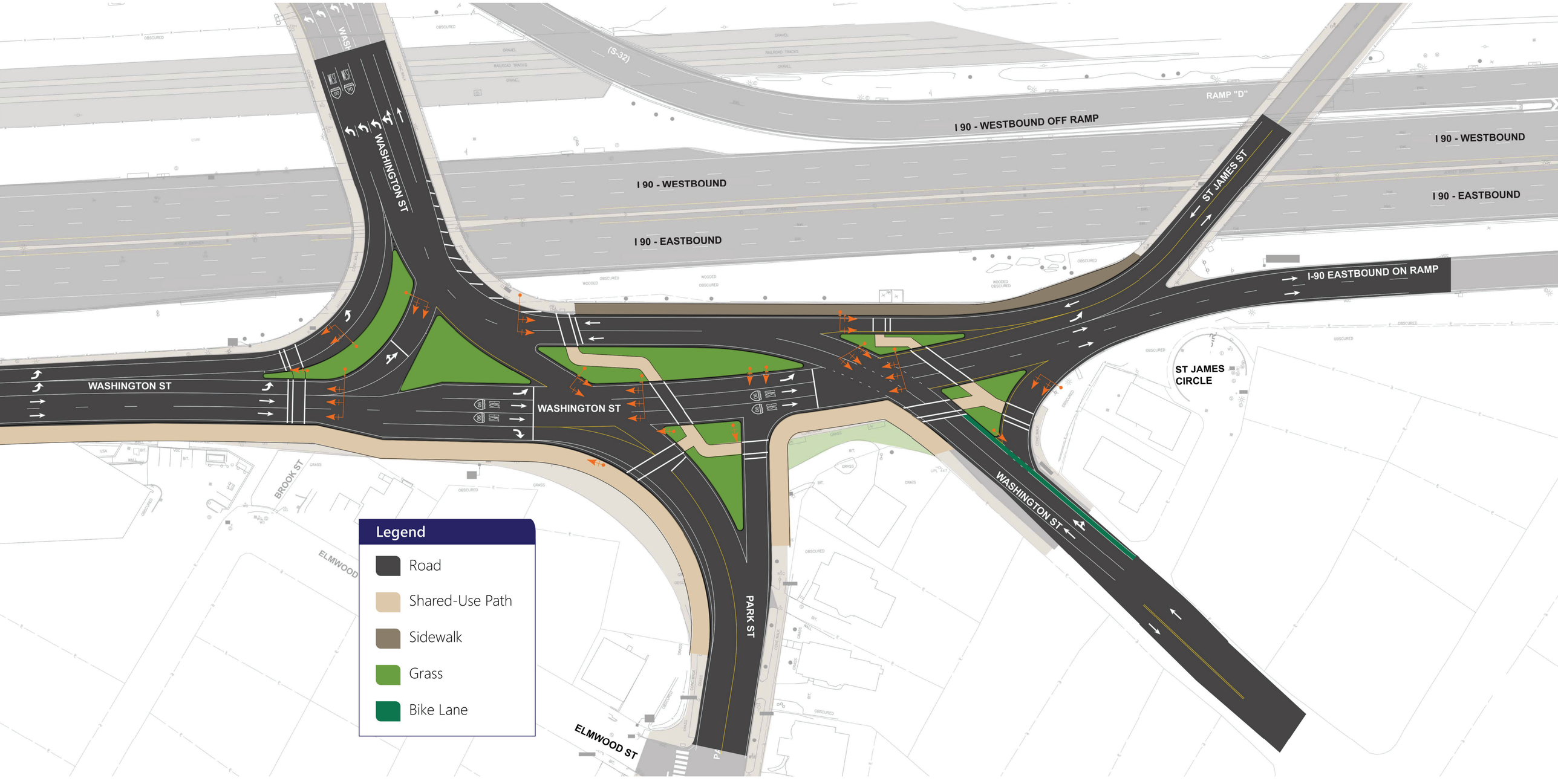
Legend

- ☑ Positive Impact
- ○ Neutral / No Impact
- ☒ Negative Impact

☑☑ *Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*

MassDOT Massachusetts Department of Transportation Highway Division

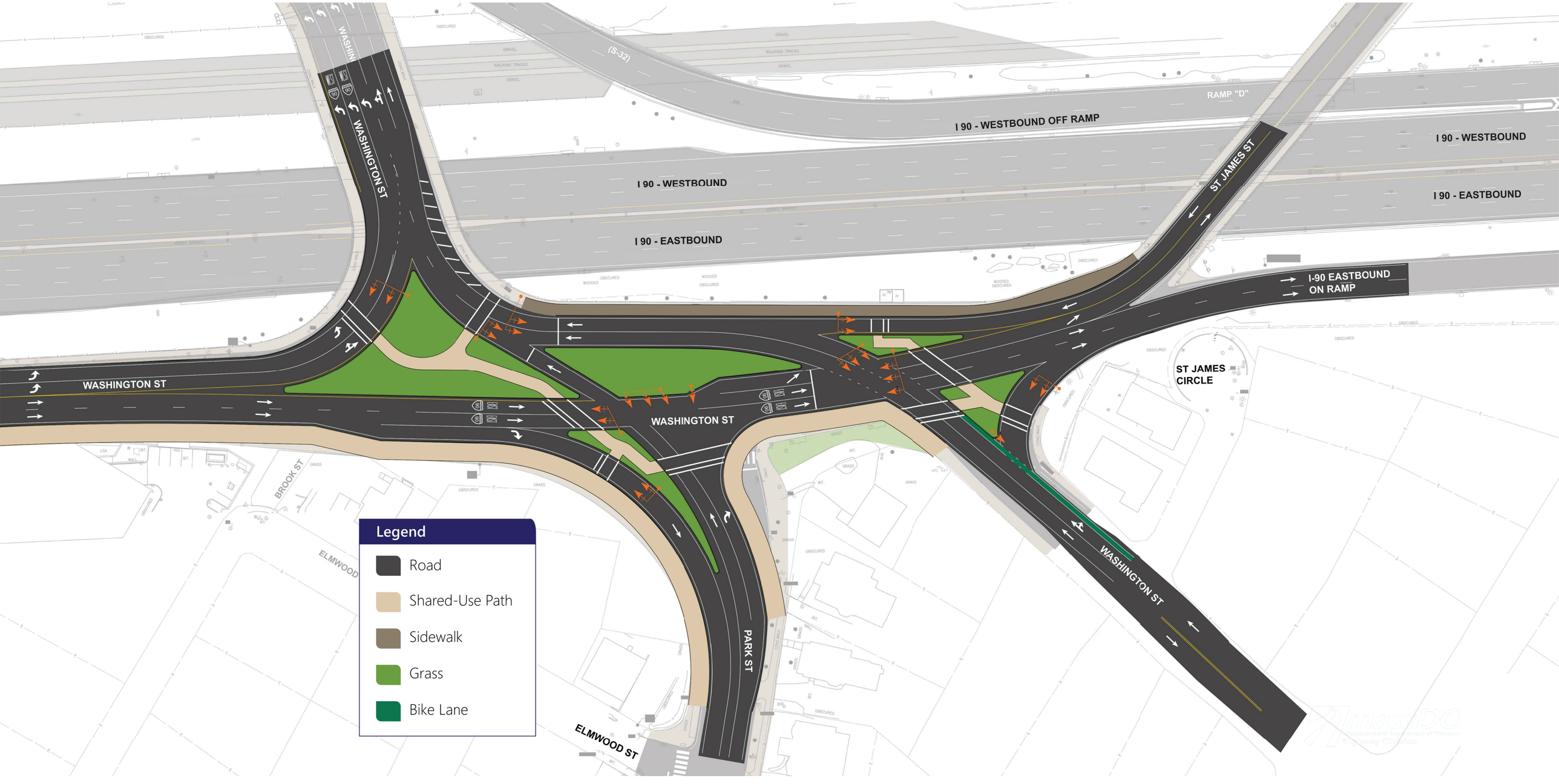
Southeast Quadrant—Signalized Concept A1



Alternative Summary – Southeast Quadrant: Signals
Concept A1 (Signal Control with Divided Eastbound Left-Turns)

	Goal	Notes
	Enhance Safety	- Eliminates weave on Washington St WB bridge (far left lane will be free-flow, but will not conflict with other movements)
	Improve Traffic & Reduce Congestion	- Introduces new signal control for Washington St EB left-turn movements towards West Newton and Watertown - Minimal changes to operations on other approaches - New traffic signal equipment throughout the quadrant
	Improve Transit	- Minimal impacts to transit accommodations
	Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on south side of Washington St EB - No changes to locations of existing crosswalks
	Property Access & Parking	- Minimal changes to property access and parking
	Land Use & Placemaking	- Minimal changes for land use and placemaking

Southeast Quadrant—Signalized Concept A2



Alternative Summary – Southeast Quadrant: Signals
Concept A2 (Signal Control with Combined Eastbound Left-Turns)

	Goal	Notes
	Enhance Safety	- Eliminates weave on Washington St WB bridge by adding signal control for all movements
	Improve Traffic & Reduce Congestion	- Introduces new signal control for all Washington St EB left-turn movements - Minimal changes to operations on other approaches - New traffic signal equipment throughout the quadrant
	Improve Transit	- Minimal impacts to transit accommodations
	Expand Multimodal Infrastructure	- Provides a shared-use path for pedestrians and bicyclists on south side of Washington St EB - New signalized crosswalks across both approaches at the foot of the Washington St WB bridge - Existing crosswalk across Washington St EB west of Park St shifted approximately 300 ft east to be included in Park St signal
	Property Access & Parking	- Minimal changes to property access and parking
	Land Use & Placemaking	- Opportunity for increased green space and placemaking with larger median island at foot of Washington St WB bridge

MassDOT Massachusetts Department of Transportation Highway Division

Alternative Evaluation—Southeast Quadrant: Signals

(Poll Question #7)

Goal	Concept A1: Signal Control with Divided EB Left-Turns	Concept A2: Signal Control with Combined EB Left-Turns
Enhance Safety	☑	☑☑
Improve Traffic & Reduce Congestion	☑	☑
Improve Transit	○	○
Expand Multimodal Infrastructure	☑	☑
Property Access & Parking	○	○
Land Use & Placemaking	○	☑

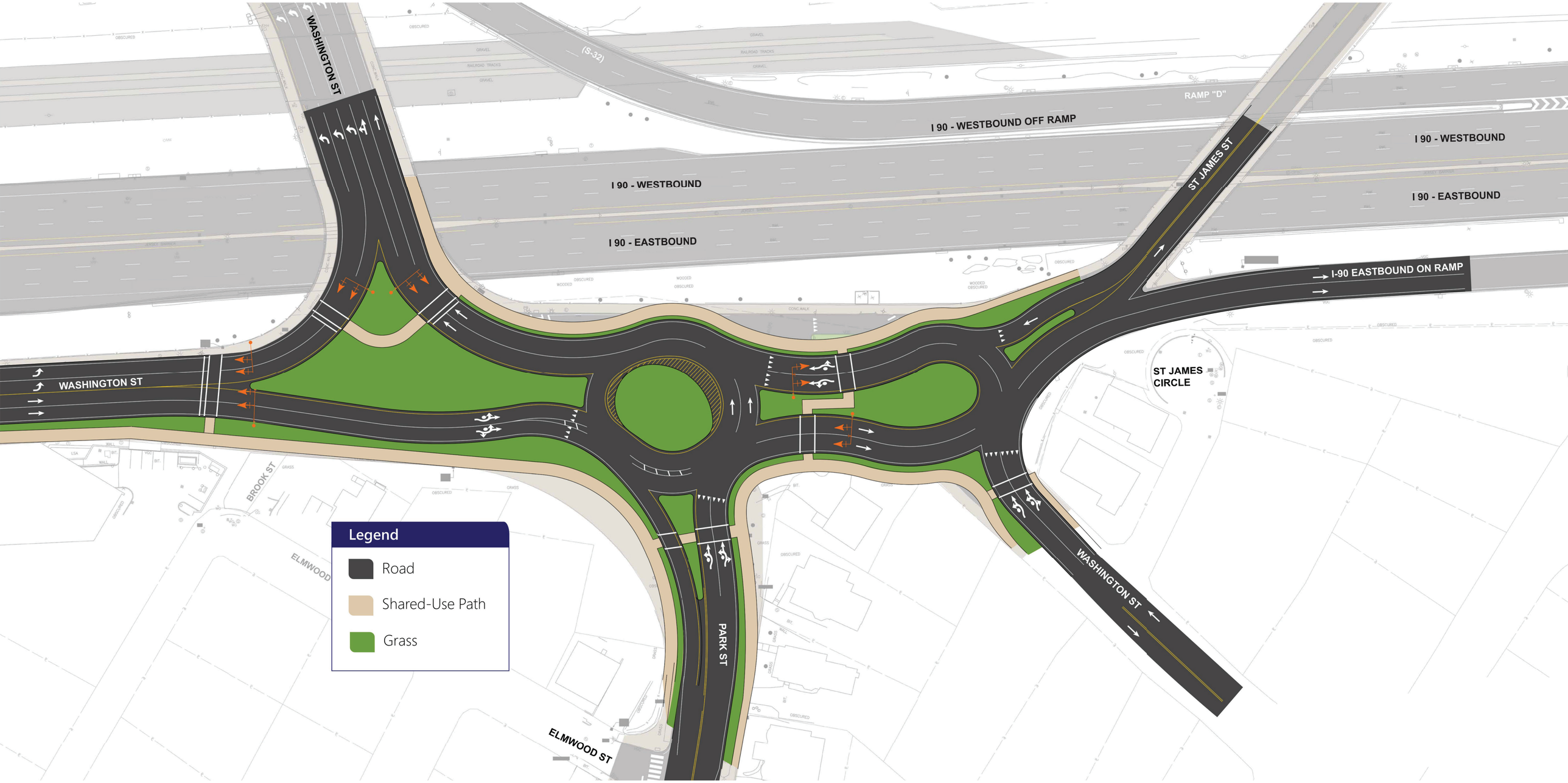
Legend

- ☑ Positive Impact
- ○ Neutral / No Impact
- ☒ Negative Impact

☑☑ *Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*

MassDOT Massachusetts Department of Transportation Highway Division

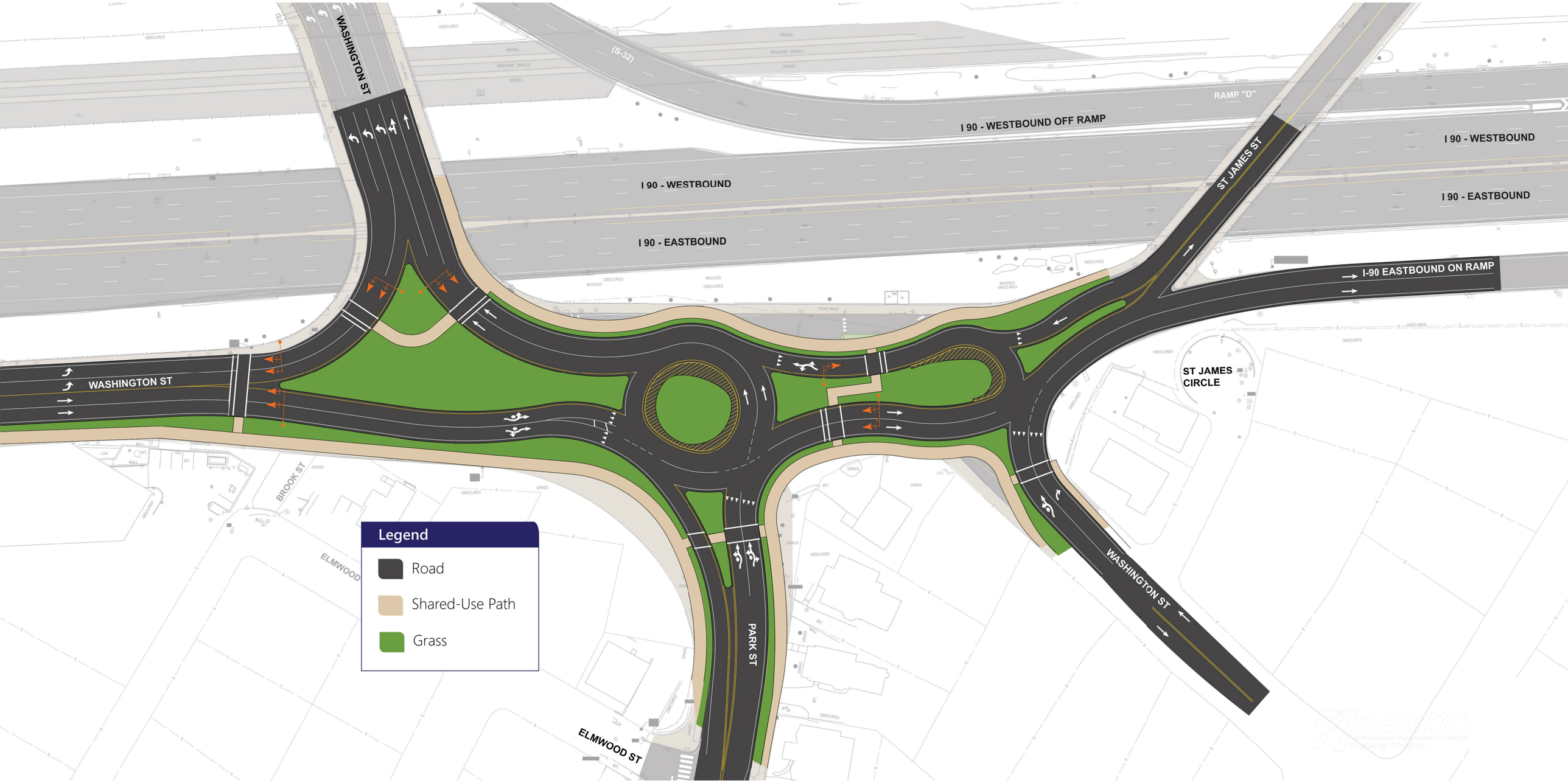
Southeast Quadrant—Roundabout Concept B1



Alternative Summary – Southeast Quadrant: Roundabouts
Concept B1 (Roundabouts with Two Lanes Westbound)

	Goal	Notes
	Enhance Safety	- Roundabouts instead of signalized intersections reduces number of conflict points - Geometry of roundabouts requires vehicles to slow down at all times of day - Eliminates weave on Washington St WB bridge by adding signal control for both approaches
	Improve Traffic & Reduce Congestion	- Roundabouts result in minimal stops or conflicts for Washington St EB traffic towards I-90 EB - Result in longer queues for Park St NB and Washington St NB approaches than signal concepts - Mid-roundabout signalized pedestrian crossings may cause traffic to stop in roundabouts - New St James St WB to Park St SB and I-90 EB on-ramp movements allowed with roundabouts - Introduces new signal control for Washington St EB left-turns onto bridge
	Improve Transit	- Minimal impacts to transit accommodations
	Expand Multimodal Infrastructure	- Provides shared-use paths for pedestrians and bicyclists on both sides of Washington St - Signalized ped/bike crossings provided between Park St and Washington St NB roundabouts - Signalized crosswalks provided across both approaches at foot of Washington St WB bridge
	Property Access & Parking	- Partial ROW taking required for property southeast of Park St roundabout
	Land Use & Placemaking	- Opportunities for placemaking within the roundabouts

Southeast Quadrant—Roundabout Concept B2



Alternative Summary – Southeast Quadrant: Roundabouts
Concept B2 (Roundabouts with One Lane Westbound)

	Goal	Notes
	Enhance Safety	- Roundabouts instead of signalized intersections reduces number of conflict points - Geometry of roundabouts requires vehicles to slow down at all times of day - Eliminates weave on Washington St WB bridge by adding signal control for both approaches
	Improve Traffic & Reduce Congestion	- Roundabouts result in minimal stops or conflicts for Washington St EB traffic towards I-90 EB - One lane WB decreases efficiency for movements from Washington St NB and St James St WB - Result in longer queues for Park St NB, Washington St NB, and St James St WB approaches - Mid-roundabout signalized pedestrian crossings may cause traffic to stop in roundabouts - New St James St WB to Park St SB and I-90 EB on-ramp movements allowed with roundabouts - Introduces new signal control for Washington St EB left-turns onto bridge
	Improve Transit	- Minimal impacts to transit accommodations
	Expand Multimodal Infrastructure	- Provides shared-use paths for pedestrians and bicyclists on both sides of Washington St - Signalized ped/bike crossings provided between Park St and Washington St NB roundabouts - Signalized crosswalks provided across both approaches at foot of Washington St WB bridge
	Property Access & Parking	- Small ROW taking required for property southeast of Park St roundabout (less impactful than ROW taking required for Concept B1)
	Land Use & Placemaking	- Opportunities for placemaking within the roundabouts

massDOT Massachusetts Department of Transportation Highway Division

Alternative Evaluation—Southeast Quadrant: Roundabouts

(Poll Question #8)

Goal	Concept B1: Roundabouts with Two Lanes Westbound	Concept B2: Roundabouts with One Lane Westbound
Enhance Safety	☑	☑
Improve Traffic & Reduce Congestion	☑	○
Improve Transit	○	○
Expand Multimodal Infrastructure	☑	☑
Property Access & Parking	☒	○
Land Use & Placemaking	☑	☑

Legend

- ☑ Positive Impact
- ○ Neutral / No Impact
- ☒ Negative Impact

☑☑ *Presented as a tie-breaker when one concept is expected to have a greater magnitude of positive impacts*

MassDOT Massachusetts Department of Transportation Highway Division